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Dr. Henry Kennedy read a paper on the progress of epidemics.

The object of this paper was to show that a great general law existed, which appeared to regulate the progress of all the more wide-spread epidemics which have passed over Europe within authentic records; that this law exhibits a progressive movement, and that this movement is from east, or south-east; to west, or north-west.

The paper was illustrated by a printed chart, which offered, in one view, an outline of almost all the great epidemics of which there is any account. The writer further showed that, in the diseases of the lower animals, the same law also obtained, and that in America the same had been observed when the vegetable world was affected with blights.

Notice was likewise taken of the fact that great cold had, on different occasions, been found to move from east to west.

From these several facts the writer concluded that some general law exists, regulating the progress of epidemics; and that the existence of this law must alter materially the views commonly held on the spread of epidemic sickness by either famine or contagion.

The writer confined himself exclusively to the consideration of the general law, and said he hoped to be allowed, on some future occasion, to make some deductions from it.

The President exhibited a diagram, representing the oscillations of the barometer from December 18th, 1845, to the present date.

The Secretary read a letter from Robert James Graves, Esq., M. D., containing a development of the method by which he proposes to prevent the waste of water, by evaporation, from tanks and reservoirs, in hot climates.

" In certain regions of the earth nature has placed obstacles apparently insurmountable, to the free and comfortable enjoyment of existence; one of these has hitherto baffled all the efforts of art, and is caused by the prevalence of drought: thus, in Australia rain falls at certain periods of the year in such great abundance, that the rivers overflow their banks, and large tracts of country are entirely inundated for a considerable length of time; shortly after the close of the rainy season the water subsides, and in the course of a few weeks, so great has been the evaporation, that where deep and rapidly flowing rivers existed, nothing remains but stagnant pools, water-holes, and lake-like reaches of the rivers, occurring at intervals in their former beds. These natural reservoirs of water are of the most vital importance to the colonists and their extensive flocks. But there are many seasons, during which the air becomes so extremely hot and dry, that even those reservoirs are dried up, and man and beast are forced to quit the now inhospitable district. A similar defect of climate exists in many other countries, such as Hindostan, Scinde, and those kingdoms bordering on the banks of the Euphrates, which were the very first settled and occupied by civilized peoples. Man has in all these places struggled from the earliest periods to secure for himself a sufficient and continuous supply of water, the life-blood of living beings, whether animal or vegetable. To promote an object of such paramount importance, we find that national works of the most expensive and magnificent description have been undertaken by the rulers of those countries; thus, in Hindostan the Mogul emperors have each emulated his predecessor in the construction of tanks of immense magnitude, and at an enormous expense, to preserve the necessary supplies of water during the dry season. The Kings of Ceylon even exceeded the Mogul emperors in the size of their tanks, constructed for the same purpose; while in Mesopotamia, and the countries watered by the Tigris and Euphrates, as likewise in Persia and Affghanistan, the inhabitants resorted to the expedient of constructing reservoirs under ground, and in some instances they even went so far as to conduct rivers league after league beneath the soil, in order to obviate the evil results of evaporation: each village having a well, by means of which they were enabled to draw up the treasures of these subterraneous currents. In Constantinople the Greek emperors built extensive arched reservoirs for holding water, and from which a considerable portion of the city was supplied with this indispensable element.

" To persons living in this moist climate it may appear of very little importance to guard against the evaporation of water, and the effects arising from it; but to the philosopher, who, by experiments in his laboratory, has made himself familiar with the power of evaporation; or the traveller, who, like Mr. Strutt, has seen in Australia evaporation carrying off daily from reservoirs the water upon which his own life, and that of his companions and cattle, depended; and who has marked the appalling rapidity with which it disappears, when the air has become dry and parched from the great heat prevailing;—to such, I say, it must appear evident, that evaporation may become so intense as to render nugatory all efforts to preserve any large supply of water in open tanks or reservoirs, and thus prevent the colonization of countries in other respects most desirable. Sir T. L. Mitchell observed the thermometer at 126° in the shade, under the influence of the hot dry wind of Australia. How rapidly must evaporation proceed, when water is exposed to such a wind!

" It is my object to show, that this great source of waste can be effectually prevented, and that too by very simple means; and that the surface of reservoirs, tanks, water-holes, and ponds, in the hottest climate and warmest weather, can be, for the most part, preserved from the loss occasioned by evaporation.

" The method which I propose for resisting the evaporation of water could not have been either thought of or applied before the present time, when a succession of discoveries has rendered us masters of many vegetable substances, such as Indian-rubber, gutta-percha, &c., which, after passing through certain simple processes, may be made available for rendering linen, cotton, woollen cloths, and canvass, when even of the finest texture, impervious either to air or water. It is by the help of such prepared canvass that the contrivance I am about to describe is to be carried into execution.

" Those who are practically versed in this department of art, will readily suggest what species of impermeable water-proof canvass is best adapted in practice for accomplishment of so desirable an end. For me it is sufficient to know that such a material can be manufactured at a cheap rate, of a light but strong texture, and in sufficient quantities to cover, as with a carpet, any extent of water that may be necessary. When a piece of water is to be protected from evaporation, its water-proof carpet may be spread by the following simple means:—at suitable distances from each other on the canvass, and made of the same material, are to be inserted pouches or bags, which, when it is wished to float the canvass on the water, may be inflated with air in the usual manner; when not in use, these bags need not, of course, be otherwise than in their collapsd condition. Let us suppose a piece of canvass nine feet in breadth, and 150 in length, having three bags in rows, twelve or fifteen feet distant from each other; let us suppose such a piece of canvass placed on the water of a tank, it will then protect from evaporation a surface corresponding to its own extent. Similar pieces might be attached, by tying together their sides and ends, until the whole surface was similarly protected. All this could be done without much labour or trouble: the canvass could be carried in a boat, and dropped from its stern, in the same manner as fishermen drop their nets, the men inflating each row of pouches or bags at the time it became necessary to cast them in; ropes could be also fastened to the extremities of the piece, so as to connect it with the bank or other boundary of the space of water, loops being attached to their extremities for this purpose. Such canvass could be easily spread out or hauled in, and would effectually prevent, while over the water, any evaporation taking place, no matter how dry the atmosphere, or how intense the heat of the sun. Neither would this method have the inconvenience that at first it is apparently liable to, of heating the water in the tank, &c.; for we know that water cannot be easily heated from above, inasmuch as the water warmed at the surface becomes specifically lighter, and thus, being incapable of sinking, forms a superficial stratum, which prevents the propagation of the heat downwards. It is evident that by this method a considerable quantity of the covering, sufficient, indeed, to form a non-evaporating surface over large ponds, water-holes, &c., might be carried by a single horse. When an exploring party, so provided, arrives at a pond, water-hole, &c., they can readily cover it, either by carrying ropes round the piece of water, or by means of one or two men swimming across, holding the ropes attached to the edge of the canvass; thus may be preserved for months a supply, which, if left exposed to the absorbing influence of the atmosphere, would have vanished in the course of a few weeks.

" The following extract from the work of Lieutenant-Colonel Sir T. L. Mitchell, Surveyor-General of New South Wales, proves that the preservation of water will hereafter form in Australia the most essential feature in agriculture; and consequently every means adapted to facilitate this object, will be of the greatest value in that extensive field for British colonization and enterprsie :—' With equal truth it may be observed, that there is no region of the earth susceptible of so much improvement, solely by the labour and ingenuity of man. If there be no navigable rivers, there are no unwholesome savannas; if there are rocky ranges, they afford at least the means of forming reservoirs of water; and although it is there uncertain when rain may fall, it is certain that an abundant supply does fall; and the hand of man alone is wanting to preserve the supply, and regulate its use. Where natural resources exist, but require art and industry for their development, the field is open for the combination of science and skill, the profitable investment of capital, and the useful employment of labour.'

" The preceding extract distinctly shows (what indeed is confirmed by other travellers) that civilized man will be unable to form permanent settlements in the extensive and fertile regions forming the interior of Anstralia, unless he can call to his assistance means adequate to overcome the formidable difficulty presented by want of water, during several months of the year. The method I have invented, by which we can readily and cheaply cover even a large surface of water, will, no doubt, greatly facilitate the accomplishment of what would be otherwise, in many localities, unattainable. Instead of the expense of vaulting over reservoirs, or covering tanks, we can now make the *water itself support its own roof*—a roof, it is true, thin and delicate of structure; but, nevertheless, by reason of its impermeability, not less capable of preventing evaporation than if it consisted of the most solid masonry. The floating carpet, or roof, possesses the great additional advantage of rising or falling, according as the quantity of water in the reservoir increases or diminishes, so that all access of air to its surface, and consequently all evaporation, is prevented. This covering, being opaque, will keep the water perfectly in the shade, a circumstance, which, combined with deficient ventilation, would in itself much retard evaporation, as is exemplified even here by the wetness of roads overshadowed by trees, and by the water remaining in ditches, when covered by *lemna* or duck-weed, so long after the summer heats have dried up all other ditches in their neighbourhood. In some parts of Russia, where the weather is very hot in summer, the peasants use water-tubs with floating covers of wood, and which are said to answer the purpose perfectly, both of preventing loss by evaporation and keeping the water sweet."

MARCH 16TH, 1850. (Stated Meeting.)

The **REV. HUMPHREY LLOYD, D.D.,** PRESIDENT, in the Chair.

The Secretary of the Academy read the following Report from the Council:

During the past year the first part of the twenty-second volume of the Transactions of the Academy has been published. The second part of the volume is nearly completed, and a copy of it, in sheets, is now laid on the table of the Academy. The Proceedings have also appeared as usual, although we regret to say, that, owing to some temporary difficulties, the Proceedings of three or four of our late Meetings are still in arrear.

The Museum of the Academy was honoured in the month of August last by a private visit from His Royal Highness the Prince Albert, accompanied by His Excellency the Lord Lieutenant, and several other distinguished noblemen. His Royal Highness was pleased to take a very great interest in the antiquities exhibited to him; and on leaving the Museum expressed much gratification with the collection.

The Committee of Science have been engaged for the last few months in the consideration of a measure of considerable importance, of which the substance has already been laid before you. They have proposed to the Council to organize, under the auspices of the Academy, a system of meteorological observations in Ireland, similar to that which has been recently carried out in various parts of Germany. They have shewn that Ireland, from its geographical position, and other causes, affords a peculiarly favourable field for such observations; and there is every reason to hope that if the proposed